information providing means for providing the user with the information data;

inputting means for enabling the user to input a signal indicating that the provided information data is necessary or unnecessary;

vector converting means for converting a keyword group signal to a vector signal, the keyword group signal comprising at least one keyword signal attached to each piece of information;

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metric learning means for assigning to the metric signal a value to predict a user's necessity degree to the keyword on the basis of both the signal showing that each information data is necessary or unnecessary and the vector signal; and

metric memorizing means for memorizing the metric signal.

34. A metric learning apparatus according to claim 33, wherein the metric signal is calculated on the basis of both the signal indicative of whether or not the provided information data is necessary or unnecessary and the vector signal, the metric signal comprising both an affirmative signal based on information obtained when the signal inputted with the inputting means shows that the provided information data is necessary and a negative signal based on information obtained when the signal inputted with the inputting means shows that the provided information data is unnecessary.

35. A metric learning apparatus according to claim 34, wherein the affirmative metric signal is made up of an auto-correlation matrix of the vector signal in cases where the signal inputted by the inputting means shows that the provided information data is necessary and the negative metric signal is made up of an auto-correlation matrix of the vector signal in cases where the signal inputted by the inputting means shows that the provided information data is unnecessary.

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36. A metric learning apparatus according to claim 34, wherein each of the affirmative and negative metric signals is made up of a matrix of elements in which an element (i, j) is calculated based on a first frequency of the information judged to be necessary, a second frequency of the information judged to be unnecessary, a third frequency of information simultaneously including both of an i-th keyword signal and a j-th keyword signal and judged to be necessary, and a fourth frequency of information simultaneously including both of an i-th keyword signal and a j-th keyword signal and judged to be unnecessary.

37. A metric learning apparatus according to claim 36, wherein the (i, j) element of the matrix is made up of a signal quantitatively estimating a difference between a first probability distribution indicating that the information is necessary or unnecessary and a second probability distribution indicating that the information simultaneously including both of the i-th keyword signal and the j-th keyword signal is necessary or unnecessary.

38. A metric learning apparatus according to claim 33, wherein the keyword signal includes a classification symbol.

39. A metric learning method which reflects, into a metric signal, a relationship between a user's response to provided information and a keyword attached to the information, the information including information data and one or more keywords made up of a character stream and attached to the information data, the method comprising the steps of:

providing the user with the information data;

enabling the user to input a signal indicating that the provided information data is necessary or unnecessary;

converting a keyword group signal to a vector signal, the keyword group signal comprising at least one keyword signal attached to each piece of information;

assigning to the metric signal a value to predict a user's necessity degree to the keyword on the basis of both the signal showing that each information data is necessary or unnecessary and the vector signal; and

memorizing the metric signal.

40. A metric learning method according to claim 39, the metric signal comprises both an affirmative metric signal including information obtained when

the signal inputted in the inputting step shows that the provided information data is necessary and a negative metric signal including information obtained when the signal inputted in the inputting step shows that the provided information data is unnecessary.

41. A metric learning method according to claim 40, wherein the affirmative metric signal is made up of an auto-correlation matrix of the vector signal in cases where the signal inputted in the inputting step shows that the provided information data is necessary and the negative metric signal is made up of an auto-correlation matrix of the vector signal in cases where the signal inputted in the inputting step shows that the provided information data is unnecessary.

42. A metric learning method according to claim 40, further comprising the steps of forming each of the affirmative and negative metric signals of a matrix of elements, in which an element (i, j) is calculated based on a first frequency of the information judged to be necessary, a second frequency of the information judged to be unnecessary, a third frequency of information simultaneously including both of an i-th keyword signal and a j-th keyword signal and judged to be necessary, and a fourth frequency of information simultaneously including both of an i-th keyword signal and a j-th keyword signal and judged to be unnecessary.

each of the affirmative and negative metric signals is made up of a matrix of which (i, j) element is calculated on a first frequency of the information judged to be necessary, a second frequency of the information judged to be unnecessary, a third frequency of the information, in which both of an i-th keyword signal and a j-th keyword signal are included simultaneously, judged to be necessary, and a fourth frequency of the information , in which both of an i-th keyword signal and a j-th keyword signal are included simultaneously, judged to be unnecessary.

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43. A metric learning method according to claim 42, wherein the (i, j) element of the matrix is made up of a signal quantitatively estimating a difference between a first probability distribution indicating that the information is necessary or unnecessary and a second probability distribution indicating that the information simultaneously including both of the i-th keyword signal and the j-th keyword signal is necessary or unnecessary.